NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

AGROFORESTRY PLANTING

(acre)

CODE 704 CA INTERIM

DEFINITION

The establishment, harvesting, and maintaining of forestry plants to control or disposal of water, and for agricultural and silvicultural cropping using intensive agricultural techniques.

PURPOSES

The purpose of this practice is to provide trees and shrubs that will achieve one or more of the following:

1. consume soil moisture from a perched water table to affect the movement of ground water by interception,
2. consume agricultural wastewater,
3. produce wood fiber products for posts, firewood, paper/cardboard, or co-generation of energy.
4. produce forage for livestock, and/or wildlife.

CONDITIONS WHERE PRACTICE APPLIES

On land capable of producing concurrently agricultural and silvicultural crops or short rotation forest crops. Agricultural crops include vegetable, small grains, row crops, and forage plants. Silvicultural and forest crops include species used for forest plantations, field windbreaks, trees, hedgerows, water uptake plantings, fuelwood, pulpwood and other similar plantings.

CRITERIA

1. General

The following items are to be addressed during the planning and design phase of the plan development:

a. The land area must be suitable for the planned trees or shrubs, for the intended purpose.

b. The source, quantity, and quality of water must be adequate. The depth and direction of flow must be known.

c. The selected plant species to be established shall be as set forth in the Vegetative Guide in Section II of the FOTG.

d. The ET values for the selected plants shall be obtained or determined from reliable sources.

2. Additional Criteria for ground water interception

An irrigation system shall be installed if needed for establishment, during periods of drought or a declining water table and to leach accumulated salts from the root zone.

Species selected shall be deep rooted and capable of tolerating the anticipated root zone salinity. The area of tree canopy shall be large enough to evapotranspire the estimated volume of water required to maintain the desired down slope depth to water table. A minimum or four rows of trees crossing the direction of subsurface flow are recommended.

3. Additional Criteria for waste water disposal

Plantings designed to use waste water from on-farm drainage systems or other problem water needing disposal where utilization of the water will concentrate the salts and lower the volume needing final disposal. The volume and chemical properties of the water-needing disposal are the key to the design of these plantings. Utilization is based on using the maximum amount of available water needed to meet the consumptive use and leaching requirements of the site and the species.

Acres of trees needed: Enough tree canopy cover acreage shall be planted to utilize (through evapotranspiration, irrigation system inefficiencies and leaching) the volume of wastewater requiring disposal. The effect of soil salinity and other soil contaminants on potential tree evapotranspiration shall be considered.

Tree species: Species selection must be based on 1) the volume of waste water tree can evapotranspire on the desired acreage 2) the tolerance to accumulated salinity

and other constituents originating in the applied waste water 3) it's economic return if harvested and marketed.

Subsurface Drainage: A subsurface drainage system shall be provided in the tree planting if salt leaching would be inhibited by the existence of a shallow perched water table.

Irrigation: The irrigation system used to apply the wastewater or fresh water shall meet Conservation Practice Standard 443 - Irrigation System Surface and Subsurface, 442 - Irrigation System Sprinkler, or 441 - Irrigation System Trickle.

CONSIDERATIONS

Toxicant may concentrate in the vegetation and, if used as a wildlife or livestock feed are a major planning concern. Monitoring to know the toxicity level is needed.

Pest control or other strategies may be needed to keep toxicant, from entering the wildlife food chain.

The wildlife species within the planting area need to be inventoried and there habitat given proper consideration.

The implementation of this practice is dependent upon the application of one or more of the following conservation practices:

Irrigation System
Conservation Crop Rotation
Tree / Shrub Establishment
Windbreak /Shelterbelt Establishment
Hedgerow Planting
Fence
Riparian Forest Buffer
Surface Drainage
Subsurface Drain

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Water Quantity

1. The effect of water table, depth of root zone, and use of soil water by crops.
2. Effects on the downstream flows or aquifers that would effect other water uses or users.
3. Effects of crop residue on soil moisture.
4. Effects of the volume of downstream flow on environmental, social, and economic values.

Water Quality

1. Effects in changes in salinity and other dissolved chemicals in soils, ground water, and surface waters.
2. Effects of the timing of the vegetation growth, include clipping, harvesting, removal, and re-establishment on the nutrient balance.
3. Effects on the visual quality of onsite and downstream water resources.
4. Effects of filtering by crop residue on movement of sediments, dissolved salts, and sediment attached substances.

PLANS AND SPECIFICATIONS

Plans are to show the location of the area to be treated, the source of water, and the planting arrangement.

Specifications for the establishment and harvesting of agroforestry crops are to address the following items:

1. kind of agroforestry plantings to be established
2. agricultural crop species
3. site preparation
4. establishment method
5. irrigation requirements

6. inrow spacing and arrangements
7. number of rows, and distance between rows.
8. method of planting, and cultural practices
9. salinity control

OPERATION AND MAINTENANCE

There are a number of maintenance items that are necessary to maintain a healthy stand, and to achieve the benefits for which the plantings were established. A maintenance plan will be prepared that addresses the appropriate items.

1. irrigation water requirements
2. tree pruning
3. weed control
4. rainfall and wind erosion control
5. water quality management
6. pest management
7. grazing management,
8. harvesting methods
9. wildlife habitat